

I claim:

1. A sound processing system comprising:
a speaker;
an integrated circuit having a first terminal coupled to the speaker, the
5 integrated circuit further comprising:
an output circuit coupled to the first terminal, wherein the output
circuit applies to the first terminal an output signal to drive the speaker; and
an input circuit coupled to the first terminal, wherein the input
circuit processes an input signal from the speaker via the first terminal.

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- SUB A1* 2. ~~The system of claim 1, wherein the integrated circuit further comprises a
multiplexing circuit coupled between the first terminal and the output and input
circuits.~~

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3. The system of claim 1, further comprising a functional unit and an
activation circuit that activates the functional unit in response to the input signal
from the speaker exceeding a threshold level.

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- SUB A2* 4. ~~The system of claim 3, wherein the functional unit is coupled to the
output circuit and begins an output operation in response to being activated by the
activation circuit.~~

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5. The system of claim 4, wherein:
the functional unit comprises a memory array and access circuitry capable
of reading values from the memory array; and
the output circuit comprises a converter coupled to the access circuitry,
wherein the converter converts a series of values read by the access circuitry into
an analog signal that determines the output signal.

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6. The system of claim 5, wherein the input circuit comprises:
 an amplifier coupled to the input/output pin;
 a second converter coupled to the amplifier and the access circuitry,
 wherein the second converter converts the input signal from the speaker into a
 5 series of values read that the access circuitry writes to the memory array.

7. The system of claim 3, wherein the activation circuit includes a delay
 element coupled to prevent activation of the functional unit during a period
 following completion of an operation of the functional unit.

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8. The system of claim 1, further comprising:
 a memory array; and
 access circuitry capable of reading values from the memory array, wherein:
 the output circuit comprises a converter coupled to the access circuitry,
 15 wherein the converter converts a series of values read by the access circuitry into
 an analog signal that determines the output signal.

9. The system of claim 8, wherein the input circuit comprises:
 an amplifier coupled to the input/output pin;
 20 a second converter coupled to the amplifier and the access circuitry,
 wherein the second converter converts the input signal from the speaker into a
 series of values read that the access circuitry writes to the memory array.

10. The system of claim 1, wherein the speaker is coupled between the first
 25 terminal of the integrated circuit and ground, and the output signal from the
 integrated circuit has a signal level referenced to ground.

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~~11. The system of claim 1, wherein the integrated circuit is in a three pin package including a first pin connected to the speaker and the first terminal of the integrated circuit, a second pin for connection to a power supply, and a third pin for connection to ground.~~

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~~12. The system of claim 11, wherein the three pin package is a T092 package.~~

~~13. An integrated circuit comprising:~~

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~~an input/output pin;~~

~~a sound processing circuit;~~

~~an output circuit coupled to the input/output pin, wherein the output circuit applies to the input/output pin an output signal representing a sound; and~~

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~~an activation circuit coupled to the input/output pin and the functional unit, wherein in response to an input signal from the input/output pin, the activation circuit activates the sound processing circuit.~~

~~14. The integrated circuit of claim 13, further comprising an input circuit~~

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~~coupled to the input/output pin, wherein the input circuit, when active, transfers the input signal received from the input/output pin to the sound processing circuit.~~

~~15. The integrated circuit of claim 14, further comprising a control circuit~~

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~~coupled to the sound processing circuit, wherein the control circuit selects an operation performed by the processing circuit when the activation circuit activates the sound processing circuit.~~

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16. The integrated circuit of claim 15, wherein the sound processing circuit comprises a first functional unit that performs an output operation to generate a signal to the output circuit and a second functional unit that performs an input operation to processes the input signal from the input circuit.

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17. The integrate circuit of claim 16, wherein the sound processing circuit comprises:

a memory array;

10 a read circuit coupled to the memory array, wherein the read circuit is part of the first functional unit and the output operation includes reading from the memory array a series of values representing a sound; and

a write circuit coupled to the memory array, wherein the write circuit is part of the second functional unit and the input operation includes writing to the memory array a series of values representing the input signal.

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18. The integrated circuit of claim 13, wherein the activation circuit comprises a delay coupled to prevent the activation circuit from activating the sound processing circuit during a delay period following completion of an operation by the sound processing circuit.

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19. The integrated circuit of claim 13, further comprising a die and a three-pin package in which the die is mounted, the three-pin package having exactly three pins including the input/output, a pin for connection to a power supply, and a pin for connection to ground.

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20. A method for operating a sound processing system, comprising:
connecting a terminal of a sound processing circuit to a speaker;
creating a vibration in the speaker that causes the speaker to
generate an input signal to the terminal of the sound processing circuit;

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activating a functional unit in the sound processing circuit in response to the input signal; and

in response to activating the functional unit, generating an output signal from the functional unit through the terminal to the speaker, wherein the output signal drives the speaker to produce a sound.

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21. The method of claim 20, wherein creating the vibration comprises making a noise that causes a vibration in the speaker.

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10 22. The method of claim 20, wherein creating the vibration comprises touching in the speaker.

23. The method of claim 20, wherein the sound processing circuit is an integrated circuit and the terminal is a bi-direction input/output pin of the integrated circuit.

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24. The method of claim 20, wherein generating the output signal comprises performing an output operation, and the method further comprising disabling activation of the functional unit during a delay time following the completion of the output operation.

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